

TECHNICAL REVIEW DOCUMENT
for
RENEWAL of OPERATING PERMIT 95OPPB068

Colorado Mental Health Institute at Pueblo
Pueblo County
Source ID 1010006

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March and May 2002
Revised June and July 2002

I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The original Operating Permit was issued October 1, 1997, and expires on October 1, 2002. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted October 29, 2001, additional information submitted November 15, 2001, previous inspection reports, and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at <http://www.cdphe.state.co.us/ap/Titlev.html>.

On April 16, 1998, the Colorado Air Quality Control Commission directed the Division to implement new procedures regarding the use of short term emission and production/throughput limits on Construction permits. These procedures are being directly implemented in all operating permits that had not started their Public Comment period as of April 16, 1998. All short term emission and production/throughput limits that appeared in the construction permits associated with this facility that are not required by a specific State or Federal standard or by the above referenced Division procedures have been deleted and all annual emission and production/throughput limits converted to a rolling 12 month total. Note that, if applicable, appropriate modeling to demonstrate compliance with the National Ambient Air Quality Standards was conducted as part of the Construction Permit processing procedures. If required by this permit, portable monitoring results and/or EPA reference test method results will be multiplied by 8760 hours for comparison to annual emission limits unless there is a specific condition in the permit restricting hours of operation.

Any revisions made to the underlying construction permits associated with this

facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

This source is classified as a psychiatric hospital under Standard Industrial Classification 8063. This facility is a psychiatric hospital with the following specific emission units: 2 coal-fired boilers and 2 natural gas-fired back-up boilers. Based on the information available to the Division and provided by the applicant, it appears that no modifications to these significant emission units has occurred since the original issuance of the operating permit. In addition, the list of insignificant activities has not changed since the original permit issuance.

Note that the coal fired boilers share a stack and baghouse. Since they are equipped with a control device and the pre-control potential to emit exceeds major source levels the Compliance Assurance Monitoring (CAM) requirements apply to these units.

The facility is located at 1600 West 24th Street in Pueblo. This facility is located in an area that has been designated as attainment for all criteria pollutants. The Great Sand Dunes National Wilderness Area, a federal class I designated area, is within 100 km of this facility.

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to update actual emissions and to more appropriately identify the potential to emit (PTE). The PTE for the natural gas-fired back-up boilers in the original TRD was based on emission factors and 8,760 hours per year of operation at the maximum design rate and did not take into account the regulatory emission limit for PM (Reg 1). In addition, since there has been a change in emission factors, for those pollutants whose PTE is based on emission factors, the PTE has been adjusted to reflect the updated emission factors. Emissions (in tons per year) at the facility are as follows:

Pollutant	Potential to Emit	Actual Emissions
PM ¹	98.2	1.62
PM ₁₀ ²	91.9	0.62
SO ₂	107.4	97.7
NO _x	136.4	38.3
CO	75.5	30.3
VOC	3.4	0.36

¹PTE for natural gas-fired back-up boilers is based the PM limit (0.172 lbs/mmBtu) x design heat rate x 8760 hrs/yr.

²PM₁₀ is presumed to equal PM for the natural gas-fired back-up boilers.

Potential to emit for the natural gas-fired back-up boilers is based on the information identified in the table and the maximum hourly fuel consumption rate, AP-42 emission factors and 8760 hrs/yr of operation. Potential to emit for the coal-fired boilers is based on permitted emission limits. Actual emissions are based on the Division's 2000 inventory.

III. Discussion of Modifications Made

Source Requested Modifications

The source's requested modifications identified in the renewal application were addressed as follows:

Page following cover page

The Permit Contact was changed as requested.

Section II.3 – Pathological Waste Incinerator

The incinerator has been removed and the permit cancelled. Therefore, the source requested that the conditions for the incinerator be removed from the permit.

Other Modifications

In addition to the modifications requested by the source, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments, to the Colorado Mental Health Institute at Pueblo Operating Permit with the source's requested modifications.

These changes are as follows:

Page following Cover Page

Clarified dates for monitoring and compliance periods, i.e. changed “June - November” to “June 1 - November 30”.

Monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on the permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

The citation (above “issued to” and “plant site location”) on the page following the cover page provides the incorrect title for the state act. The title will be changed from “Colorado Air Quality Control Act” to “Colorado Air Pollution Prevention and Control Act”. In addition, the dates were removed from the citation.

Section I - General Activities and Summary

Removed language in Condition 1.1 that indicated the relative population of Pueblo. This information is subject to change and is not necessary.

The language in Condition 1.3 was changed based on comments made by EPA on other Operating Permits.

Condition 1.4 was split into two conditions, one addresses enforceability (Condition 1.4) and the other recordkeeping requirements (Condition 1.5).

Added “as noted” after Condition 17 in Condition 1.4 to reflect changes that were made to Colorado Regulation No. 15 (ozone depleting compounds). The reference to Section II, Condition 4.6 in Condition 1.4 was removed. This was the odor requirement for the incinerator, which was removed. Added Section II, Condition 2.7.3 and 2.8 to Condition 1.4 as these are state-only conditions that apply to the coal-fired boilers.

Conditions 13 and 17 in Condition 1.4 were renumbered to 14 and 18 and Condition 21 in Condition 1.5 was renumbered to 22. The renumbering changes were necessary due to the addition of the Common Provisions requirements in the General Conditions of the permit.

Added a “new” section 3 for PSD applicability. This facility is a minor source.

Note that Condition 1.6 is now located in Section 3, as Condition 3.2.

Added a “new” section 4 to address the applicability of the requirements in 112(r) of the federal Clean Air Act.

Added a “new” Section 5 for compliance assurance monitoring (CAM), note that the two coal fired boilers are subject to CAM and the specific CAM requirements are included in Section II of the permit.

Section II - Specific Permit Terms

Section II.1: Boilers Burning Natural Gas

- Included new AP-42 emission factors (March 1998) in the permit to calculate annual emissions as required by Condition 1.1 in the permit.

The emission factors included in the permit are from Section 1.4, Tables 1.4-1 (small boilers < 100 mmBtu/hr) and 1.4-2. The new emission factors are more conservative for CO and VOC and less conservative for NO_x, PM and PM₁₀.

- Changed the format of Condition 1.1, included an equation to calculate emissions (this was previously in Condition 1.2). Removed language from Condition 1.1 regarding recordkeeping, and fees as the recordkeeping requirements are contained in Section I, Condition 1.5 of the permit. In addition, minor revisions were made to the language in Condition 1.1.
- Removed the equation for calculating emissions from Condition 1.2, it is now in Condition 1.1. In addition, specified that fuel consumption shall be determined using fuel meters and other facility records as necessary.
- Based on comments made by EPA on other operating permits, the monitoring language in Condition 1.3 was changed to “In the absence of credible evidence to the contrary, compliance with the particulate matter standards shall be presumed whenever natural gas is used as fuel in these boilers.”
- The language regarding the monitoring for the 20% opacity requirement (Condition 1.5) was changed to similar language as specified for the particulate matter limitation. In addition, the opacity standard was rewritten to more closely resemble the language in Regulation No. 1.
- The 30% opacity provisions in Reg 1, Section II.A.4 were not included in the original operating permit. As part of the renewal these requirements were included in the permit. Monitoring for this opacity requirement is similar language as specified for the particulate matter limitation.

Section II.2: Boilers Burning Coal

The coal-fired boilers share a stack and baghouse. The construction permit issued (86PB240-1) has never specifically restricted the boilers from operating together, although the source has never operated the boilers simultaneously. The source had always presumed that the baghouse could not handle both boilers operating simultaneously. However, in anticipation of increasing plant capacity, testing was conducted on the baghouse with both boilers running simultaneously and it was determined that the baghouse would operate efficiently with both boilers running simultaneously. There are no plans in the near future to increase the plant capacity due to budget limitations and it is expected that the coal-fired boilers will not be operated simultaneously due to budget constraints and fuel consumption limits in the construction permit.

- Removed short term emission and fuel consumption limits.
- Updated AP-42 emission factors. Emission factors that will be included in the permit are from AP-42, Section 1.1, dated September 1998, Tables 1.1-3, 1.1-4 and 1.1-19, for spreader stoker boilers. It should be noted that the only emission factor that changed from the current permit is the NO_x emission factor and it is less conservative than in the current permit.
- Added an emission limitation for PM₁₀ of 1.5 tons/yr to Condition 2.1. Since the emission limitations for NO_x and PM in the underlying construction permit were modified to reflect a change in emission factors (increased NO_x from 55.72 tons/yr to 82.2 tons/yr and increased PM from 2.31 tons/yr to 7.8 tons/yr) directly in the operating permit as a combined construction/operating permit, the Division should have added an emission limitation for PM₁₀. The PM₁₀ emission limitation is based on the AP-42 emission factor, 12,000 tons/yr of coal and a baghouse control efficiency of 98%. With this change the language in Condition 2.1 regarding calculating PM₁₀ emissions on an annual basis was removed. Removed SO₂ annual emission requirements from Condition 2.1 and put them under the SO₂ requirements in Condition 2.7.
- The requirement to calculate emissions by the “fifteenth day of every month” was changed to require that monthly emissions be calculated by “the end of the subsequent month” in Conditions 2.1 and 2.2.
- Added the phrase “as modified under the provisions of Section I, Condition 1.3” after the construction permit citation in Conditions 2.1, 2.2 and 2.4.
- Combined the particulate matter limitations in Conditions 2.2 and 2.3 into one condition, Condition 2.2.
- Included numeric values for the Reg 1 particulate matter emission limit in

the table, rather than requiring the source to calculate the limit. The PM limitation for either a single boiler or both boilers combined are based on the maximum heat rate of 50 mmBtu/hr for each boiler. The current permit is incorrect in determining the PM emission limit for both boilers operating together. The PM value for the boilers operating together as indicated in the draft permit is correct. In addition, provided the baghouse is operated effectively, the minimum heat value of the coal that predicts compliance with the particulate matter limitation is very low (3,646 Btu/lb) and unlikely to occur, the monitoring language has been change to specify that “in the absence of credible evidence to the contrary, compliance with the particulate matter limitation is presumed provided the baghouse is maintained and operated in accordance with the requirements in Condition 2.2.1.”

- Corrected the citation for the particulate matter limit to the Reg 1 standard rather than the Reg 6 standard. As discussed below, the Reg 6 standard was streamlined out of the permit.
- Added compliance assurance monitoring provisions as Condition 2.4. See discussion below regarding the Division’s review of the source’s CAM plan.
- Revised Condition 2.5 (fuel sampling) to allow the source to use vendor analyses rather than sampling and analyzing the fuel. If vendor data is used, the average heat and sulfur content, of all coal shipments, shall be used in the monthly calculations. In addition, specific ASTM methods were not referenced but the source is required to use the “appropriate ASTM methods, or equivalent if approved by the Division in advance.”
- Some minor language changes were made to Condition 2.7 (SO₂ requirements).
- The opacity standards (Condition 2.8 and 2.9) were rewritten to more closely resemble the language in Regulation No. 1.
- The source has had difficulty performing Method 9 visible observations every two weeks as required by the current permit to monitor compliance with the opacity standards. The Division’s enforcement unit issued a warning letter to the source and specified that rather than conducting bi-weekly Method 9 observations, that the source would be required to conduct bi-weekly method 22 visible emission observations, with a Method 9 required whenever visible emissions are observed (see attached letter). In addition, the letter required that a Method 22 observation be performed, within 1 hr, for any of the specific activities identified in Reg 1, Section II.A.4. However, it is possible that activities such as soot blowing could be a common occurrence, therefore, the frequency of performing observations for the Reg 1, Section II.A.4 opacity

requirements (30%), will be every 2 weeks provided that one such activity occurs within those 2 weeks.

- The construction permit (86PB240-1) issued for these boilers indicated that the unit was subject to the state-only particulate matter and sulfur dioxide requirements in Reg 6 Part B, Section II. These Reg 6, Part B requirements were streamlined out of the operating permit since the Reg 1 requirements are more stringent. However, the Reg 6, Part B opacity requirement (Reg 6, Part B, Section II.C.3 – 20%) was not included in either the construction permit or the operating permit. The Reg 1 20%/30% requirements are more stringent than the Reg 6, Part B opacity requirements during periods of startup, shutdown and malfunction, since the Reg 6, Part B opacity requirements do not apply during those periods. While the Reg 6, Part B 20% opacity requirement is more stringent during fire building, cleaning of fire boxes, soot blowing, process modifications and adjustment or occasional cleaning of control equipment. Therefore, since no one opacity requirement is more stringent than the other at all times, all three opacity requirements are included in the operating permit. See the attached grid for a clarified view on the opacity requirements and their relative stringency.
- In addition, because the coal-fired boilers are subject to the requirements in Reg 6, Part B, Section II, they are also subject to the NSPS general provisions on a state-only basis, since the NSPS general provisions are adopted by reference in Reg 6, Part B, Section I.A. The general provisions were not included in the construction permit or the operating permit but they are included in this draft renewal permit.

CAM Plan Review

As specified previously, the coal-fired boilers are equipped with a control device, are subject to particulate matter emission limitations and have potential pre-control emissions over the major source level (100 tons/yr) and are therefore subject to CAM. As required, the source submitted a CAM plan on November 15, 2001 to supplement their renewal application.

In this CAM plan submittal, the source identified performance indicators of visible emissions and pressure differential. Following review of the draft permit prior to the Public Comment period, the source agreed to also monitor temperature in the baghouse as a third indicator. These are appropriate parameters to monitor for baghouse operation. Monitoring frequency for pressure drop and temperature of the inlet gas stream is continuous. Monitoring frequency for visible emissions is not clear in the CAM plan submitted by the source. Both daily and weekly are mentioned in the CAM plan. The Division will specify the frequency as every two weeks as directed by the enforcement unit in their warning letter to the source. The CAM requirements specify that for small pollutant specific emission units

monitoring shall include some data collection at least once per 24-hour period. Therefore, the frequency of data collection is acceptable.

Typically pressure drop is not considered adequate for baghouses that are specifying a control efficiency of 99.9%, however, the baghouse for this facility takes into consideration an efficiency of 98%. Therefore, monitoring pressure drop is acceptable. The indicator ranges are based on manufacturer's recommendations and good engineering practices and no testing was conducted to verify the indicator ranges. Previous stack test data (12/89 test) indicate PM emissions more than an order of magnitude below the PM standard (0.0102 lbs/mmBtu vs 0.181 lbs/mmBtu) and show an emission factor less than ½ of the AP-42 emission factor that will be used to calculate annual emissions. Therefore, the Division considers that additional testing is not necessary to verify the indicator ranges. Alarms sound when the pressure differential is below 1.5 inches of mercury or above 5.25 inches of mercury, the source has identified these as indicator ranges. The source has not identified an excursion explicitly in their CAM plan, therefore the Division has revised the plan to indicate an excursion is any instance when the pressure differential alarm sounds. It should be noted that the CAM plan submitted indicates that the baghouse manufacturer recommends a pressure differential between 5 and 6 inches of mercury for optimum efficiency. However, the source has indicated that they are unable to move enough air through the baghouse to reach this higher pressure differential. Operating experience has indicated that keeping the pressure between 1.5 and 5.25 inches of mercury results in efficient operation of the baghouse.

Although the inlet gas temperature on the baghouse is monitored continuously, the Division will require the source to record the temperature daily and that value will be used to determine if any excursions has occurred. The indicator range will be 275 to 375 °F. Based on operator experience, below 275 °F condensation in the baghouse could occur, which could cause the bags to be coated and potentially plug. The high side of the indicator is well below the maximum temperature rating of the bags, which is 550 °F. An excursion will be defined as any daily temperature reading outside the indicator range.

It is not clear exactly what the source wanted as an indicator range for visible emission observations, however, the Division will clarify the CAM plan to specify that up to 10% opacity is the indicator range. The Division would define any instance where visible emissions are at 10% or above to be an excursion. The 10% opacity level is selected rather than any visible emissions, since this baghouse has a 98% control efficiency. Unlike a unit with a 99.9% control efficiency, any level of visible emissions might not be a true indicator of problems with a unit rated at 98% control efficiency. In addition, the CAM plan submitted is also inconsistent with what action shall be taken for the baghouse and at what visible emission levels. In two

different places, the source indicates that the coal-fired boiler will be removed from service when visible emissions are at 10% and 20%. Therefore, the Division will clarify in the permit, that if visible emissions are present, a Method 9 reading will be taken. If the Method 9 reading indicates an opacity of 10% or above, but below 20%, the source will investigate the baghouse performance and make any repairs or adjustments necessary. A log of any repairs shall be maintained and made available upon request. If the Method 9 reading indicates an opacity of 20% or higher, a gas-fired boiler will be brought on line and the coal-fired boiler will be removed from service until repairs are made. If visible emissions persist for one hour following any maintenance activity, another Method 9 reading will be taken and if the reading still indicates visible emissions above 10%, a gas-fired boiler will be brought on line and the coal-fired boiler will be removed from service until repairs are made.

Note that the requirement to perform a Method 9 at the first sign of visible emissions was included as the Division's enforcement unit specified that a Method 9 shall be performed if visible emissions are present as part of the periodic monitoring for opacity emissions in the warning letter issued to the source. The Division believes that it will be easier for the source to comply with their permit if the CAM requirements are similar to the periodic monitoring requirements for opacity.

The CAM plan in the permit has been revised, as discussed above.

Section III – Permit Shield

- The title for Section 1 was changed from "Specific Conditions" to "Specific Non-Applicable Requirements" and a new section 3 was added for subsumed (streamlined) conditions. Note that the following applicable requirements were streamlined: Reg 6, Part B, Section II.C.2 (PM) and Reg 6, Part B, Section II.D.1.b (SO₂), because they less stringent than the PM and SO₂ requirements in Reg 1.
- Based on comments made by EPA on another permit, the following statements were added after the introductory sentence in Section 1 "This shield does not protect the source from any violations that occurred prior to or at the time of permit issuance. In addition, this shield does not protect the source from any violations that occur as a result of any modification or reconstruction on which construction commenced prior to permit issuance".
- Based on comments made by EPA on another permit, the following phrase was added to the beginning of the introductory sentence "Based upon the information available to the Division and supplied by the applicant".

- Based on comments made by EPA on another permit, the language in the justification (Section 1 - table) regarding modifications for the NSPS Dc shield was removed. The shield for the NSPS Dc requirements as non-applicable is based on the construction date of the turbines.

Section IV - General Conditions

- Added an “and” between the Reg 3 and C.R.S. citations in General Condition 3 (compliance requirements).
- Added language from the Common Provisions (new condition 3). Note that we are aware that the language in the Common Provisions may change in the near future, however, we have included the language in the Common Provisions Regulation as it is currently written. In the event that the language in the Common Provisions is revised and in effect prior to issuance of this permit we will include the revised language in the issued permit.
- The citation in General Condition 7 (fees) was changed to cite the Colorado Revised Statute. In addition, any specific identification of a fee (i.e. \$100 APEN fee) or citation of Reg 3 was removed and replaced with the language “...in accordance with the provisions of C.R.S. [appropriate citation].”
- The citation in General Condition 13 (odor) was corrected. In addition, the phrase “Part A” was added to the citation for Condition 13 (odor). Colorado Regulation No. 2 was revised and a Part B was added to address swine operations. Colorado Regulation No. 2, Part B should not be included as a general condition in the operating permit.
- Condition 17 (ozone depleting compounds) was revised to reflect updates made to Colorado Regulation No. 15.
- The reference to paragraph 21.d in Condition 21 (prompt deviation reporting) was revised to 22.d. This change was necessary as the general conditions were renumbered with the addition of the Common Provisions as general condition no. 3.
- Added the requirements in Colorado Regulation No. 7, Section V.B (disposal of volatile organic compounds) to General Condition 28.

Appendices

- First Page of Appendices – The phrase “except as otherwise provided in the permit” was added after the word “enforceable” in the disclaimer at the request of EPA.
- Appendix B and C were replaced with revised Appendices.

- The Division's zip code and the EPA addresses in Appendix D were corrected.
- Added an Appendix G to include the CAM plan.